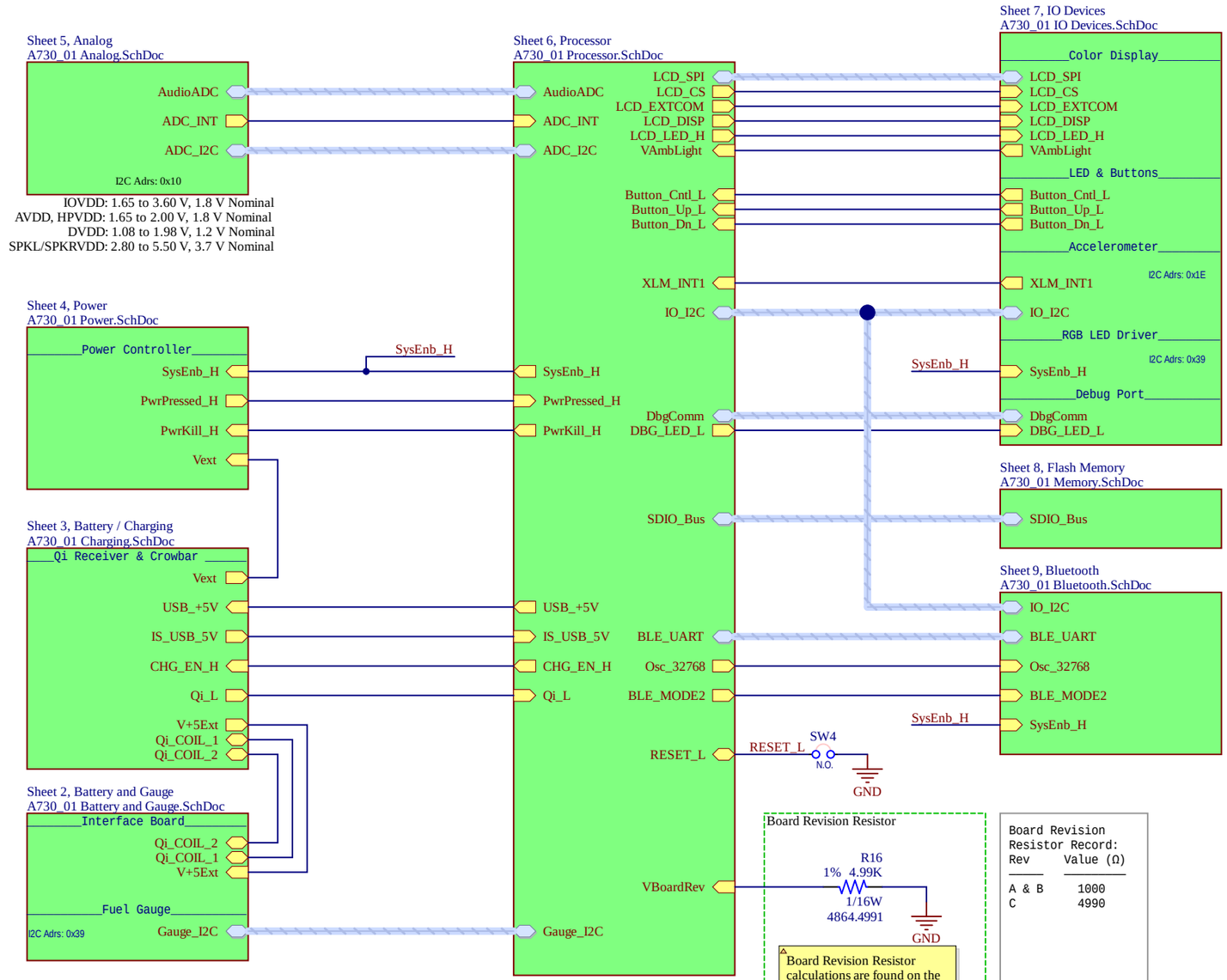


Revision History

Rev	Date	ECO	Description
A	30 Nov 2018	4758	Initial Release. Revision resistor R16 is 1000 Ohm.
B	18 Mar 2019	4791	Changed S1, S2 & S3 to 5870.0020 from 5870.0019, footprint will take either part. Revision resistor R16 is 1000 Ohm.
B1	02 May 2018	4824	Change R14 to 1 Ohm (from 10) for increased display light brightness.
C	20 Mar 2020	4964	I.S. submittal version. Revision resistor R16 is 4990 Ohm. Added 3V regulator for display LED. Add LCD_DISP pull-up. LCD_VDD to V+2.8; was V+2.8SYS. Added Qi_L to MCU PC2. Enable IO power-on while in standby (SysEnb_H to Q3-G2). Added Zener protections and proper wattage resistors for I.S. version. Changed U10 to TCXO from MEMs. Changed Q8 package to DFN, was BGA.

INTRINSIC SAFE NOTICE:

This is a Related Drawing, relating to the Scheduled Drawing "A730.12-SCH-IS-SD", which has been approved by a notifying body for the purpose of being used in an explosive environment. Do not revise this drawing without first having it reviewed by Engineering and the ISP Manager. Any changes to this drawing could result in an unsafe condition.

MP2
GND

MP51
GND

I.S. Notes:
1. Device will not be charged or connected via USB while in an explosive environment.
2. A730.01-IS is coated with two layers of sprayed conformal coating for pollution protection, therefore a clearance of 0.2 mm or greater permitted per Annex F.
3. Component symbols marked with "IS!" provide specific intrinsic safe protection.
4. Components with "DNP" are not fitted, i.e. "Do Not Populate".

Connections with a thick line, as shown above, indicate infallible pcb trace connections; trace width to be 2 traces of 1mm width or a single 2mm with >= 33 micrometers thick copper (1 oz.). See 60079-11 8.8 B 2.

I2C Device Address Table

Device	Adrs	Code
Accelerometer (FXOS8700CQ)	0x1E	0x3C
Audio ADC (MAX98090A)	0x10	0x20
EEPROM Block 0 (AT24CS08)	0x50	0xA0
EEPROM Block 1	0x51	0xA2
EEPROM Block 2	0x52	0xA4
EEPROM Block 3	0x53	0xA6
RGB LED Driver (NCP5623C)	0x39	0x72
Fuel Guage (TI BQ34Z100)	0x55	0xAA

MCU Fiducials
FID1
FID2
FID3

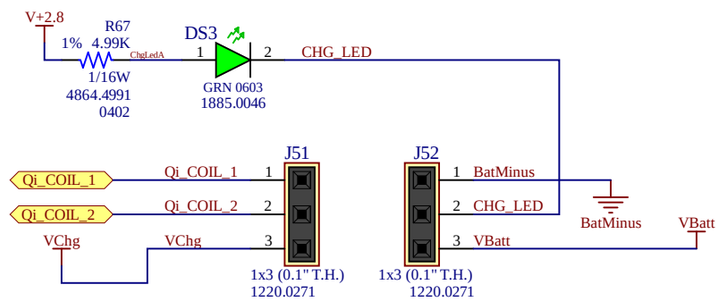
Note field color coding:
- Green: Intrinsic Safe Design Rule
- Yellow: General Information
- Red: Layout Information

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

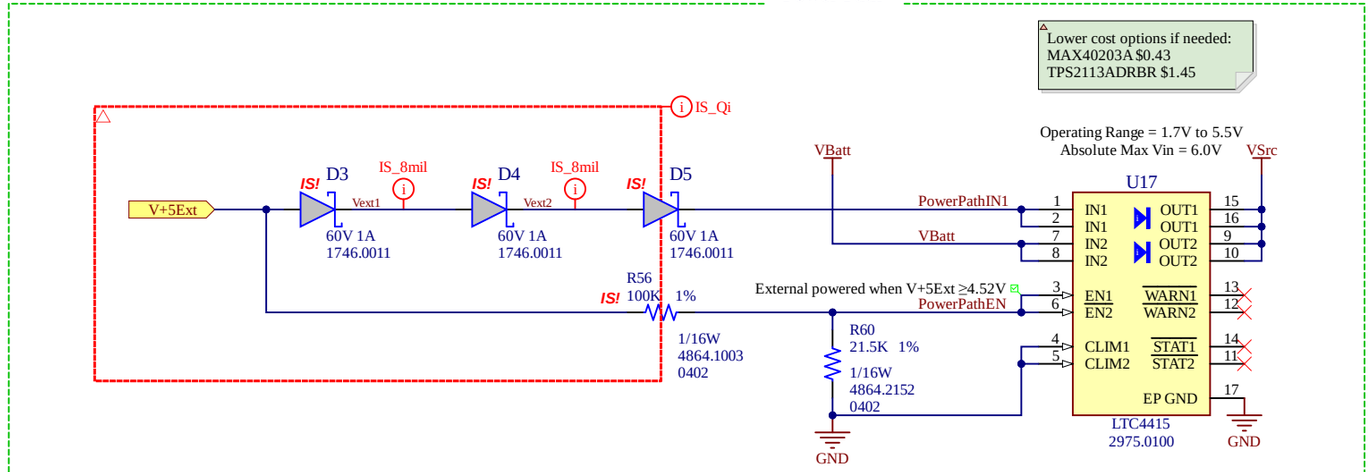
Title	Dosimeter Main Board		A730.01
Desc.	Top Sheet / Block Diagram		
Size	B	Item A730.01-IS	Rev. C
Created	10 Jan 2018	Eng. Alan Rasmussen	Sheet 1/9
Revised	20 Mar 2020		

A730_01 Top Sheet.SchDoc

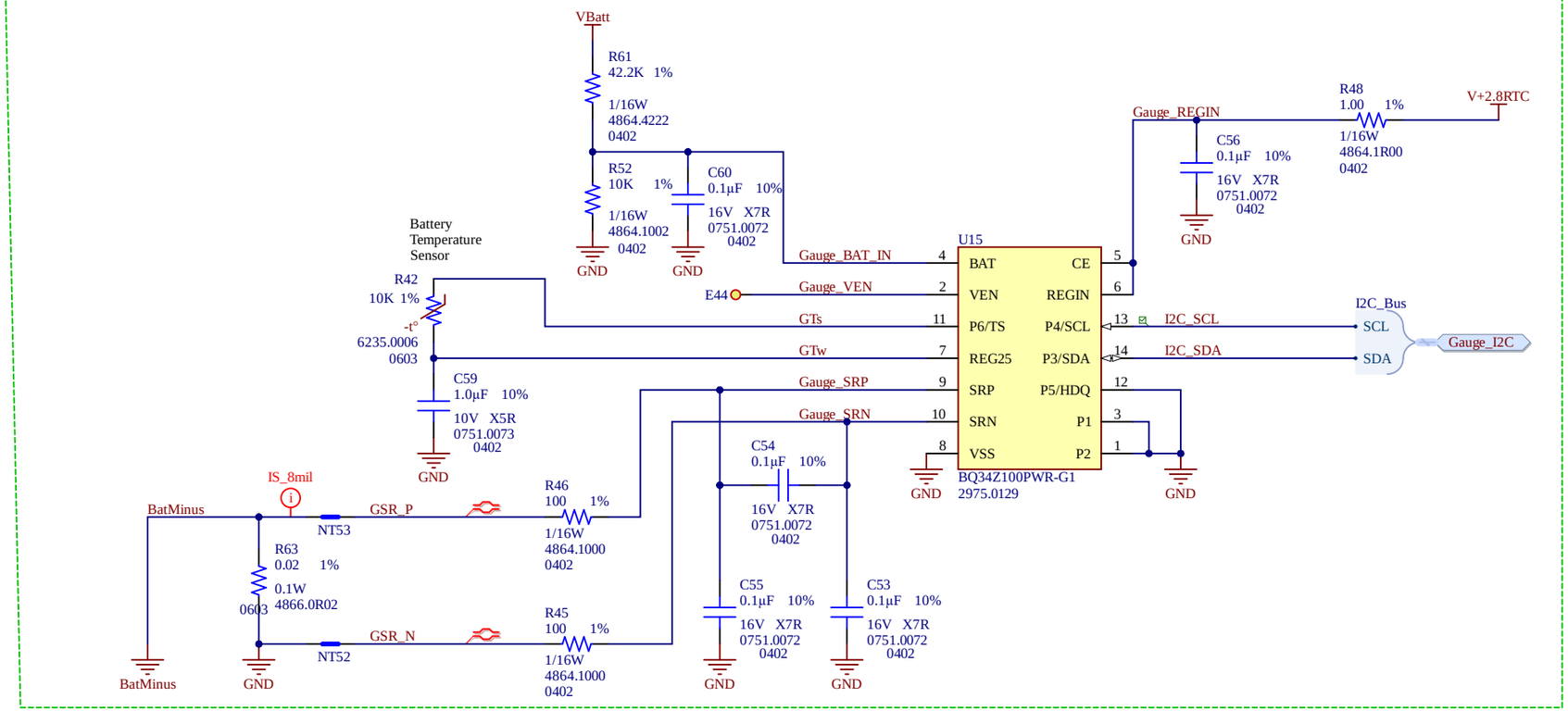
Board to Board Connection (J51 & J52)



Power Path



Fuel Gauge



This is a Related Drawing, relating to the Scheduled Drawing "A730.12-SCH-IS-SD", which has been approved by a notifying body for the purpose of being used in an explosive environment. Do not revise this drawing without first having it reviewed by Engineering and the ISP Manager. Any changes to this drawing could result in an unsafe condition.

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Title	Dosimeter Main Board		A730.01
Desc.	Battery Connection, Power Path, and Gauge		
Size	B	Item A730.01-IS	Rev. C
Created	10 Jan 2018	Eng. Alan Rasmussen	Sheet 2 / 9
Revised	20 Mar 2020		

A730_01 Battery and Gauge.SchDoc

IS Protection Scheme: Limit energy exposed to USB connector under fault conditions, charging protection provided by fuse protected Zener Diodes, and active current limiting in charger IC.

IS_Charger

I.S. Overvoltage Protection for Charging Sources

IS_8mil

V+5Ext

D8a 5.6V 5% 5W 1865.0024

D51a 5.6V 5% 5W 1865.0024

D8 5.6V 5W 1855.0017

D51 5.6V 5W 1855.0017

GND

F1 0.75A 16V 2416.0024

F51 0.125A 125V 2416.0026

3.9Ω Nom. Cold Resistance

EXT_PWR

Charger Power Switch

TP6 V+5Ext

Q9B FDC6420C 6970.0004

TP4 (050) VChg

R66 100K 1% 1/16W 4864.1003 0402

CHG_EN_L

Q9A FDC6420C 6970.0004

CHG_EN

R65 10K 1% 1/16W 4864.1002 0402

R44 1.00K 1% 1/16W 4864.1001 0402 V+5Ext Vext

R64 1.00K 1% 1/16W 4864.1001 0402 CHG_EN_H

Maximum Power Source Values:

USB_+5V	5.5V	2.0A
BQ51013B OUT	5.06V	1.5A
Um	5.5V	
Um*3/2	8.3V min	
Imax (IUSB_+5V*3/2)		3.0A
Molex USB Connector		1.8A

IS! Protection

Reference: 60079-11 7.4.9 & 8.9.2 b

Maximum Input Voltage (Um) = +5.5V

TP51 TP13

Max D:D V = 20V

USB_+5V

Q8A E55 Q8B

6970.0009 20V 3A ≤0.1Ω

6970.0009 20V 3A ≤0.1Ω

EXT_EN_L

E45

IS_USB_5V R128 10K 1% 1/16W 4864.1002 0402

C65 1.0µF 10% 10V X5R 0751.0073 0402

Max AD V = 30V

Max AD-EN V = 30V

C68 10% 0.1µF X7R 16V 0751.0072 0402

C75 4.7µF 10% 10V X5R 0751.0075 0402

Wireless WPC Receiver

U20

BQ51013B 3072.0072

AD-EN, AD, CLMP1, COMM1, BOOT1, ILIM, AC1, AC2, BOOT2, COMM2, CLMP2, GNDPAD — Output — Wireless Power — OUT, EN2, CHG, TS/CTRL, EN1, FOD, RECT, PGND, PGND

4 Absolute Max Pin Voltage = 20V

11 Qi_EN2 Vin H=1.3V, Rin pull-down=200kΩ

7 Qi_Chg_L

13 Qi_Ts

10 Qi_Term_EN1 Vin H=1.3V, Rin pull-down=200kΩ

12 Chg_ILIM

Ilim = 650mA

14 Qi_FOD

18 Qi_RECT

1 PGND

20 PGND

21

Qi_CLMP1 5

Qi_COMM1 6

Qi_BOOT1 3

Qi_AC1 2

Qi_BOOT2 17

Qi_COMM2 15

Qi_CLMP2 16

R58 249 1% 1/16W 4864.2490 0402 Rilim - Rfod

R53 2.49K 1% 1/16W 4864.2491 0402

R59 42.2K 1% 1/16W 4864.4222 0402 Ros

R57 200 1% 1/16W 4864.2000 0402 Rfod

C72 0.1µF 10% 16V X7R 0751.0072 0402

R40 10K 1% -t° 0603 6235.0006

R55 49.9K 1% 1/16W 4864.4992 0402

R41 2.49K 1% 1/16W 0402 4864.2491

C79 4.7µF 10% 10V X5R 0751.0075 0402

TP5

R54 100K 1% 1/16W 4864.1003 0402 Qi_RECT

Case Temperature, -20 to +60°C

R43 10K 1% 1/16W 4864.1002 0402 IS! Qi_Chg_L Qi_L Qi_L

LNS2 GRN 0603 1885.0046 Qi_PowerOn

R62 1% 10K 1/16W 4864.1002 0402

C71 0.082µF10% 16V X7R 0751.0084 0402

C70 0.1µF 10% 16V X7R 0751.0072 0402

C67 0.47µF 10% 16V X5R 0751.0085 0402

C66 0.022µF10% 50V X7R 0751.0083 0402

C69 0.01µF 10% 50V X7R 0402 0751.0082

C74 2200pF 5% 50V X7R 0751.0060 0402

C73 100pF 5% 50V C0G 0746.0067 0402

C77 0.47µF 10% 16V X5R 0751.0085 0402

C76 0.022µF10% 50V X7R 0751.0083 0402

C78 0.01µF 10% 50V X7R 0402 0751.0082

Qi_COIL_1

Qi_COIL_2

Interface Board

Note: Device will NOT be charged, or connected via USB, while in an explosive environment.

This is a Related Drawing, relating to the Scheduled Drawing "A730.12-SCH-IS-SD", which has been approved by a notifying body for the purpose of being used in an explosive environment. Do not revise this drawing without first having it reviewed by Engineering and the ISP Manager. Any changes to this drawing could result in an unsafe condition.

IS_Qi Design Rule: All connection in this area are isolated from all other connection by 0.2mm minimum clearance per 60079-11 Table F.1

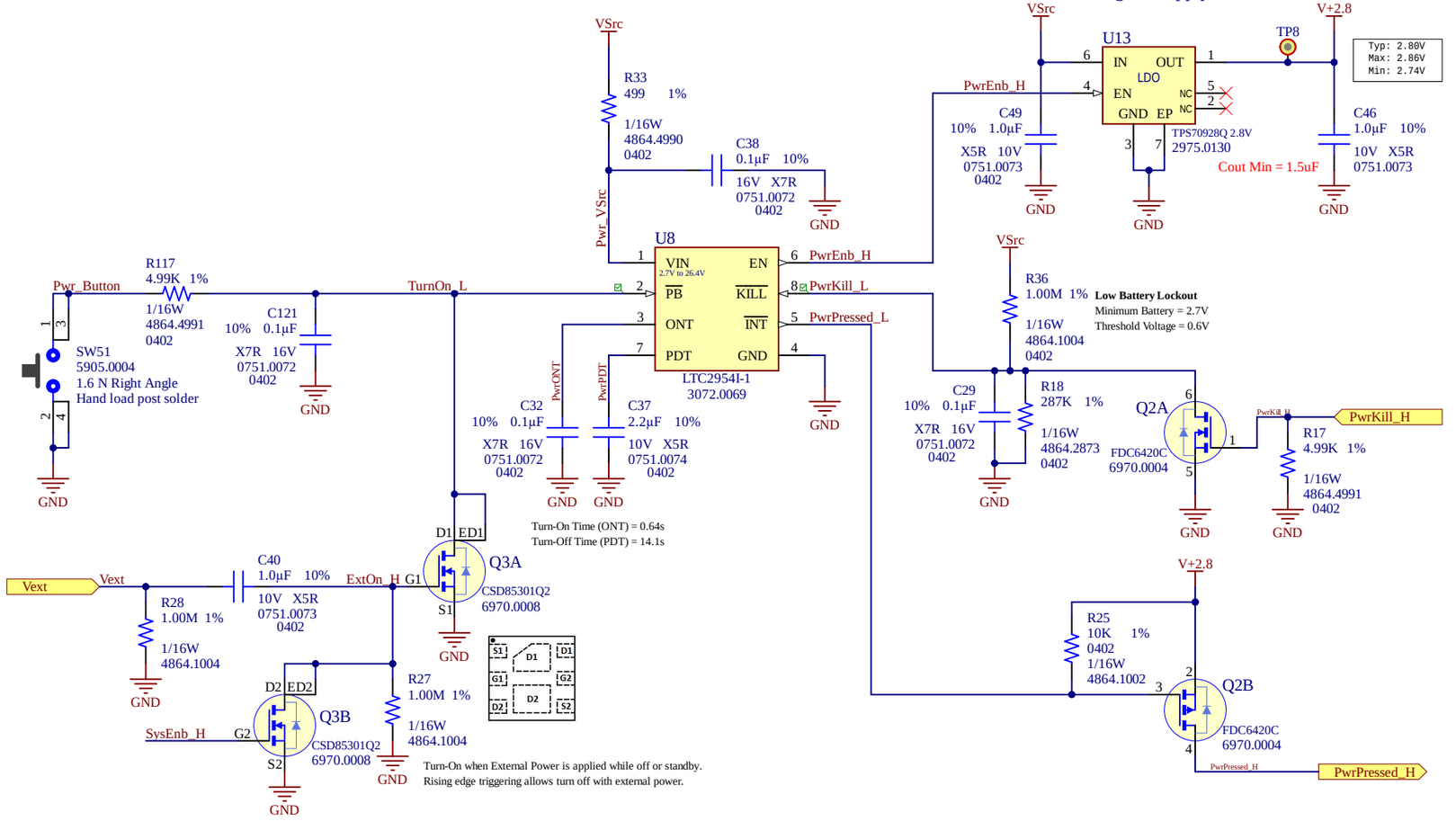
See Calculations in "730 Calculations.xlsx"

LARSON DAVIS A PCB PIEZOTRONICS DIV.

Title	Dosimeter Main Board		A730.01
Desc.	Battery Charging Circuitry		
Size	B	Item A730.01-IS	Rev. C
Created	10 Jan 2018	Eng. Alan Rasmussen	Sheet 3/9
Revised	20 Mar 2020		

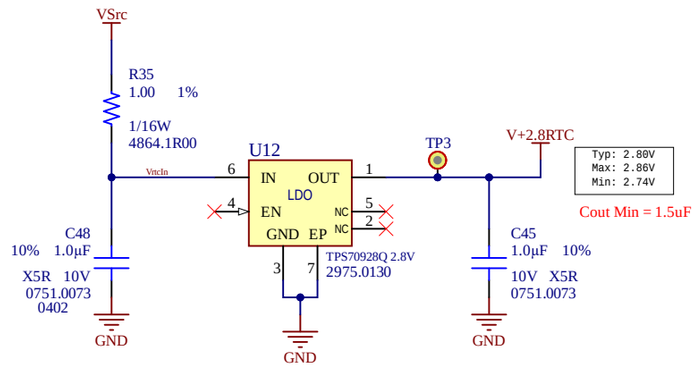
A730_01 Charging.SchDoc

Pushbutton On/Off Controller

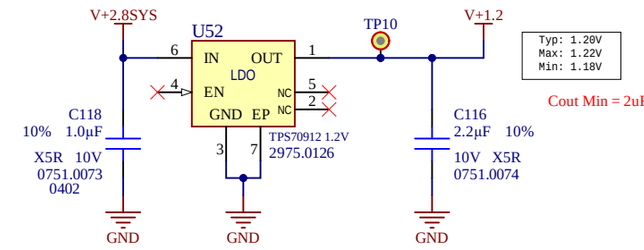


Digital Supply, Processor

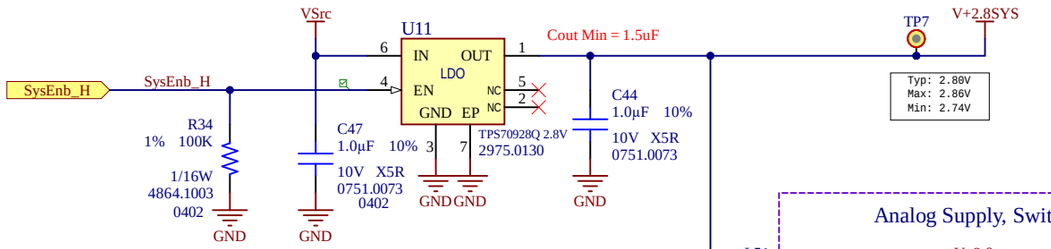
Digital Supply, Real-Time Clock



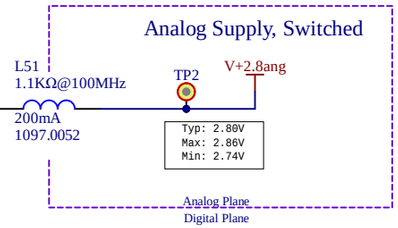
ADC, Digital Supply, 1.2V



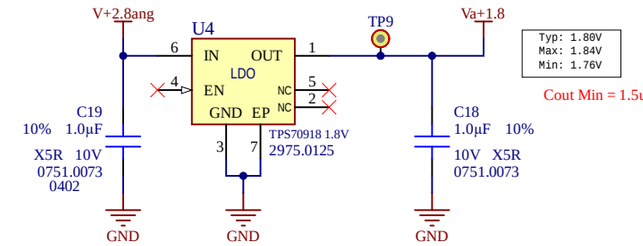
System Supply, Switched



Analog Supply, Switched



ADC, Analog Supply, 1.8V



This is a Related Drawing, relating to the Scheduled Drawing "A730.12-SCH-IS-SD", which has been approved by a notifying body for the purpose of being used in an explosive environment. Do not revise this drawing without first having it reviewed by Engineering and the ISP Manager. Any changes to this drawing could result in an unsafe condition.

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Title	Dosimeter Main Board		A730.01
Desc.	Power Supply & Charger		
Size	B	Item A730.01-IS	Rev. C
Created	10 Jan 2018	Eng. Alan Rasmussen	Sheet 4/9
Revised	20 Mar 2020		

A730_01 Power.SchDoc

This is a Related Drawing, relating to the Scheduled Drawing "A730.12-SCH-IS-SD", which has been approved by a notifying body for the purpose of being used in an explosive environment. Do not revise this drawing without first having it reviewed by Engineering and the ISP Manager. Any changes to this drawing could result in an unsafe condition.

V+2.8ang — R110 1% 1.00 1/16W 4864.1R00 — V+2.8pre

Low-Noise Regulator

U51 Voltage Pump: Maximum output voltage under fault conditions less than two times the input voltage.

U51 TPS60241 2975.0069 160 kHz
VIN VOUT 5V Regulated Pump C1+ C2+ C1- C2- GND EN

C114 10% 1.0µF X5R 10V 0751.0073 — AGND
C120 10% 0.1µF X7R 16V 0751.0072 — AGND
V5c+1 — V5c-1
C111 0.1µF 10% 16V X7R 0751.0072
C109 1.0µF 10% 10V X5R 0751.0073 — AGND
V5c+2 — V5c-2

IS_8mil — V+5ang — TP1

Typ: +5.0V
Max: +5.2V
Min: +4.8V

IS! R8 140 1% 1W 4878.1400 2512

Maximum Zener protection voltage is 5.20V per datasheet. Table A.2 maximum capacitance for this voltage is 79 µF

IS! D6 5.1V, 5.2Vmax 0.3W 1865.0022
IS! D7 5.1V, 5.2Vmax 0.3W 1865.0022 — GND

Microphone Preamplifier

Microphone Characteristics: Condensor w/ capacitance of 13pF

Microphone Contact — Guarded Input Area

P51 Pogo 0.350" 1470.0020 — InputPin
R102 1.00K 1% 1/16W 4864.1001 — InRC
C102 4.7pF 5% 50V C0G 0746.0045 0603 — Input
ESD Protection
Q51 MMBF4118 6895.0017
≈10dB Attenuation
C104 10% 0.1µF X7R 16V 0751.0072 0402 — Vprot
R101 20% 20G 1/8W 4937.2008 1206
R104 20% 20G 1/8W 4937.2008 1206
C101 4.7pF 5% 50V C0G 0746.0045 0603
R103 1.00M 1% 1/16W 4864.1004 0402 — Guard — NT1

Preamp Shell Contacts
E51 Contact 2.05mm 1132.0043
E52 Contact 2.05mm 1132.0043 — AGND

Bias — L1D 600Ω@100MHz 1097.0039
C103 100pF 5% 50V C0G 0746.0067 0402 — AGND
C106 5% 100pF C0G 50V 0746.0067 0402

Low-Noise Buffer

V+ap — C105 5% 100pF C0G 50V 0746.0067 0402 — AGND
L1A 600Ω@100MHz 1097.0039 — V+a
C108 5% 100pF C0G 50V 0746.0067 0402 — AGND
C107 2.2µF 20% 16V TAN 0726.0038 — AGND
R105 1% 1.21K 1/16W 4864.1211 0402
LP: 60 Hz
LP: ≈ 7.2kHz
C113 0.1µF 10% 16V X7R 0751.0072 0402 — GND

Q52 MMBFJ201 6895.0011 — PreampOut

16kHz 2nd order Anti-Alias Filter

L1C 600Ω@100MHz 1097.0039 — Amp_In
R4 10K 1% 1/16W 4864.1002 — AAF1
R3 121K 1% 1/16W 4864.1213 — AAF2
C8 1000pF 10% X7R 50V 0751.0087 0402 — AdcDrive
C5 5% 100pF C0G 50V 0746.0067 0402 — AGND
U1 LMV751 2945.0089 — AGND
ADC Driver

C110 2.2µF 20% 16V TAN 0726.0038
C117 2.2µF 20% 16V TAN 0726.0038
R109 165 IS! 1% 1/4W 4937.1650 1206 — In-A
R111 165 IS! 1% 1/4W 4937.1650 1206 — In-B

HP: ≈ 3.6Hz
ADC Ri ≈ 20kΩ
2 places

L1B 600Ω@100MHz 1097.0039 — Current_Sink
Ic ≈ 190 µA
C115 100pF 5% 50V C0G 0746.0067 0402 — AGND
Q53 MMBT3904 6765.0005

V+a — R1 287K 1% 1/16W 4864.2873 0402 — Vref_cc
D1 1.22V 2% 2970.0016 — AGND
R5 1.00K 1% 1/16W 4864.1001 — Vb_cc
C6 0.1µF 10% 16V X7R 0751.0072 0402 — AGND
C119 10% 1.0µF X5R 10V 0751.0073 — AGND
R116 3.16K 1% 1/16W 4864.3161 0402 — Ve_cc — ≈ 0.59 V — AGND

R106 1.00M 1% 1/16W 4864.1004 0402 — V+a
R108 1.00M 1% 1/16W 4864.1004 0402 — PreampBias — AGND
C112 0.1µF 10% 16V X7R 0751.0072 0402 — AGND

* Preamp signals via Flex, EMI filtered lines

Infallible resistors reduce maximum fault voltage to be less than 5V DC into ADC and MCU circuits.

AC attenuation is 5.52dB.

Maximum fault voltage within the IS_Analog region is 9.3V and capacitance is less than 4.1 microfarad.

IS_Analog

IS Protection Scheme: Infallible spacing and resistors isolate Protected Analog Area components with in this box.

ClassName: IS_ISOLATE_ANALOG

Calculations for these circuits are found on the network in the spreadsheet: Q:\Dev\730 Dosimeter\Electrical\730 Calculations.xlsx

Analog To Digital Converter

IOVDD: 1.65 to 3.60 V, 2.8 V Nominal
AVDD, HPVDD: 1.65 to 2.00 V, 1.8 V Nominal
DVDD: 1.08 to 1.98 V, 1.2 V Nominal
SPKL/SPKRVDD: 2.80 to 5.50 V, 3.7 V Nominal

Va+1.8 — R6 1.00 1% 1/16W 4864.1R00 0402 — AdcAVDD
R15 1.00 1% 1/16W 4864.1R00 0402 — AdcHPVDD
C12 10% 1.0µF X5R 10V 0751.0073 0402 — AGND
C23 10% 1.0µF X5R 10V 0751.0073
C22 10% 0.1µF X7R 16V 0751.0072 0402 — GND

V+2.8SYS — L2 1.1KΩ@100MHz 200mA 1097.0052 — AdcVio
R13 1.00 1% 1/16W 4864.1R00 0402 — AdcIOVDD
C14 1.0µF 10% 10V X5R 0751.0073 0402
C13 1.0µF 10% 10V X5R 0751.0073 0402 — GND

V+1.2 — R10 1.00 1% 1/16W 4864.1R00 0402 — AdcDVDD

V+2.8SYS — R12 1.00 1% 1/16W 4864.1R00 0402 — SpkVdd
C4 1.0µF 10% 10V X5R 0751.0073 0402
C3 1.0µF 10% 10V X5R 0751.0073 0402 — GND
C2 0.1µF 10% 16V X7R 0751.0072 0402 — GND

ADC is the I²S MASTER and Clock Generator

U2

AVDD 26 — HPVDD 38 — DVDD 27 — IOVDD 28 — SPKLVDD 14 — SPKRVDD 13

ADC_INT 34 — IRQ
I2C_SCL 36 — SCL
I2C_SDA 37 — SDA
I2C Adrs: 0x10

IN1/DMD — IN2/DMC — ΔΣ ADC — IN3 — IN4
Stopband Attn: >74dB
MICBIAS — BIAS — REF — HPSNS

ΔΣ DAC

MCLK 35 — I2S_ADCCLK — 12 MHz — ADC_I2S — MCLK — AudioADC
BCLK 33 — I2S_BCLK — SCLK
LRCLK 32 — I2S_LRCLK — LRCLK
SDOUT 31 — I2S_SDATA — SDATA
SDIN 30 — SdIn — E14 — GND

SPKLP 16 — SPKLP — E2 13x20
SPKLN 15 — SPKLN — E4 13x20
SPKRP 12 — SPKRP — E5 13x20
SPKRN 11 — SPKRN — E3 13x20
RCVP/LOUTL 8 — LineL — E8 13x20
RCVN/LOUTR 9 — LineR — E7 13x20
HPL 4 — HPL — E12 13x20
HPR 6 — HPR — E11 13x20
JACKSNS 7 — JackSns — E10 13x20
EP 41 — GND

E53 13x20 Mic_P — E60 13x20 Mic_N — E6 13x20 MicBias — VBias 24 — VRef 23

C7 1.0µF 10% X5R 10V 0751.0073 0402 — AGND
C1 2.2µF 20% 16V TAN 0726.0038 — AGND

AGND 25 — DGND 29 — CPVDD 3 — C1P 39 — C1N 40 — CPVSS 2 — HPGND 1 — SPKLGND 17 — SPKRGND 10

CPVDD — E18 13x20 — E50 13x20 — C1P
C1N — E54 13x20 — E56 13x20 — CPVSS

MAX98090A 3010.0005

ADC_INT — ADC_INT
I2C_SDA — SDA
I2C_SCL — SCL — ADC_I2C — I2C_Bus

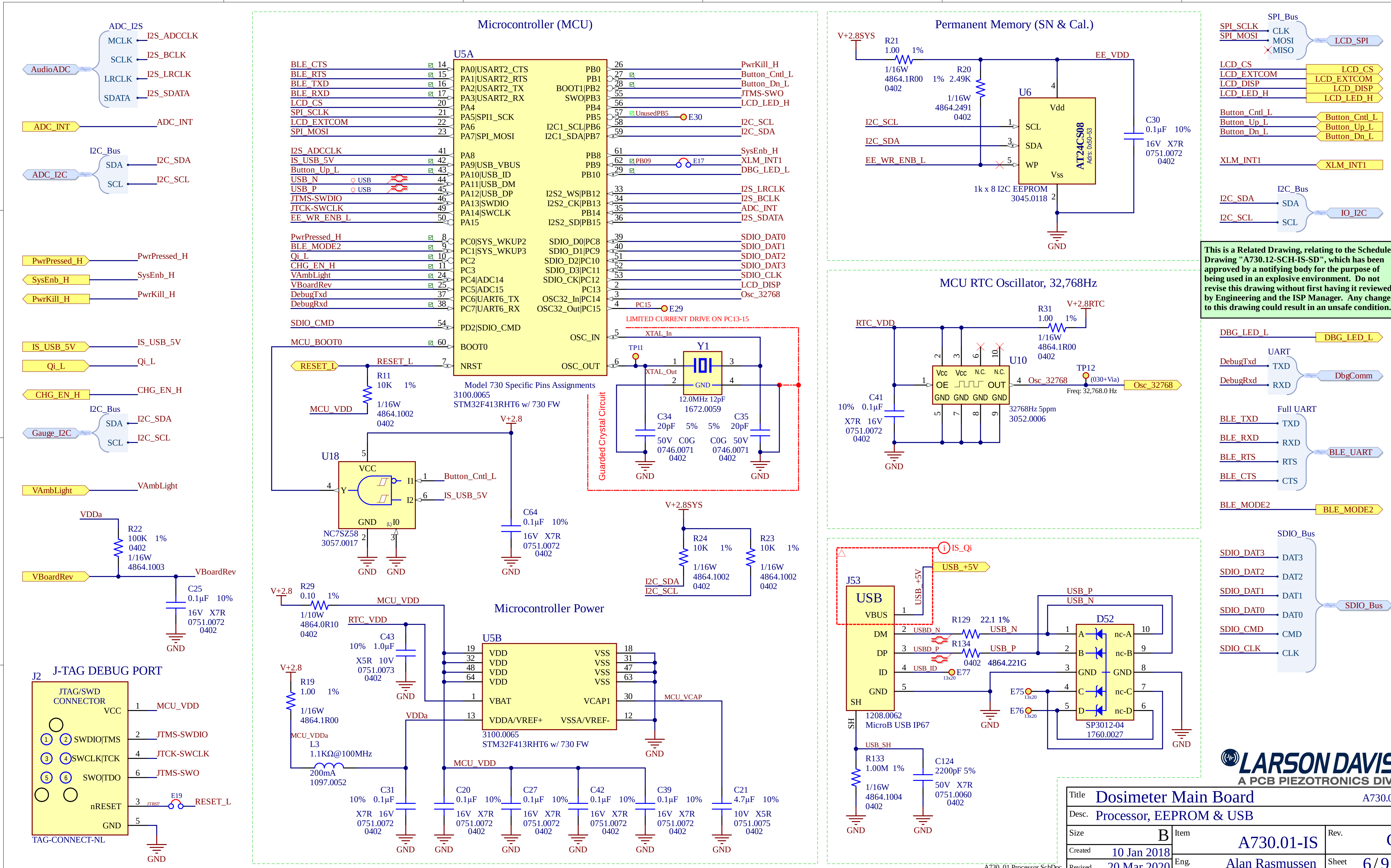
Analog Plane — Digital Plane

E1 (TH 032) — NT51 — E46 (TH 032) — AGND — GND

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Title	Dosimeter Main Board		A730.01
Desc.	Analog Front End		
Size	B	Item	A730.01-IS
Created	10 Jan 2018	Eng.	Alan Rasmussen
Revised	20 Mar 2020		
		Rev.	C
		Sheet	5/9

A730_01 Analog.SchDoc



Microcontroller (MCU)
U5A
Model 730 Specific Pins Assignments
3100.0065
STM32F413RHT6 w/ 730 FW
BLE_CTS
BLE_RTS
BLE_TXD
BLE_RXD
LCD_CS
SPI_SCLK
LCD_EXTCOM
SPI_MOSI
I2S_ADCCLK
IS_USB_5V
Button_Up_L
USB_N
USB_P
JTMS-SWDIO
JTCK-SWCLK
EE_WR_ENB_L
PwrPressed_H
BLE_MODE2
Qi_L
CHG_EN_H
VAmbLight
VBoardRev
DebugTxd
DebugRxd
SDIO_CMD
MCU_BOOT0
RESET_L
PA0|USART2_CTS
PA1|USART2_RTS
PA2|USART2_TX
PA3|USART2_RX
PA4
PA5|SPI1_SCK
PA6
PA7|SPI_MOSI
PA8
PA9|USB_VBUS
PA10|USB_ID
PA11|USB_DM
PA12|USB_DP
PA13|SWDIO
PA14|SWCLK
PA15
PC0|SYS_WKUP2
PC1|SYS_WKUP3
PC2
PC3
PC4|ADC14
PC5|ADC15
PC6|UART6_TX
PC7|UART6_RX
PD2|SDIO_CMD
BOOT0
NRST
PB0
PB1
BOOT1|PB2
SWO|PB3
PB4
PB5
I2C1_SCL|PB6
I2C1_SDA|PB7
PB8
PB9
PB10
I2S2_WS|PB12
I2S2_CK|PB13
PB14
I2S2_SD|PB15
SDIO_D0|PC8
SDIO_D1|PC9
SDIO_D2|PC10
SDIO_D3|PC11
SDIO_CK|PC12
PC13
OSC32_In|PC14
OSC32_Out|PC15
OSC_IN
OSC_OUT
PwrKill_H
Button_Cntl_L
Button_Dn_L
JTMS-SWO
LCD_LED_H
UnusedPB5
E30
I2C_SCL
I2C_SDA
SysEnb_H
XLM_INT1
PB09
E17
DBG_LED_L
I2S_LRCLK
I2S_BCLK
ADC_INT
I2S_SDATA
SDIO_DAT0
SDIO_DAT1
SDIO_DAT2
SDIO_DAT3
SDIO_CLK
LCD_DISP
Osc_32768
PC15
E29
LIMITED CURRENT DRIVE ON PC13-15
XTAL_In
XTAL_Out
TP11
Y1
GND
12.0MHz 12pF
1672.0059
Guarded Crystal Circuit
C34 20pF 5% 50V C0G 0746.0071 0402
C35 20pF 5% C0G 50V 0746.0071 0402
R11 10K 1% 1/16W 4864.1002 0402
MCU_VDD
U18
VCC
Y
I1
I2
GND
I0
NC7SZ58
3057.0017
Button_Cntl_L
IS_USB_5V
V+2.8
C64 0.1µF 10% 16V X7R 0751.0072 0402
V+2.8SYS
R24 10K 1% 1/16W 4864.1002 0402
R23 10K 1% 1/16W 4864.1002 0402
Microcontroller Power
R29 0.10 1% 1/10W 4864.0R10 0402
RTC_VDD
C43 10% 1.0µF X5R 10V 0751.0073 0402
U5B
VDD
VSS
VBAT
VCAP1
VDDA/VREF+
VSSA/VREF-
MCU_VCAP
VDDa
R19 1.00 1% 1/16W 4864.1R00
MCU_VDDa
L3 1.1KΩ@100MHz 200mA 1097.0052
C31 10% 0.1µF X7R 16V 0751.0072 0402
C20 0.1µF 10% 16V X7R 0751.0072 0402
C27 0.1µF 10% 16V X7R 0751.0072 0402
C42 0.1µF 10% 16V X7R 0751.0072 0402
C39 0.1µF 10% 16V X7R 0751.0072 0402
C21 4.7µF 10% 10V X5R 0751.0075 0402
ADC_I2S
AudioADC
MCLK
SCLK
LRCLK
SDATA
I2S_ADCCLK
I2S_BCLK
I2S_LRCLK
I2S_SDATA
ADC_INT
I2C_Bus
ADC_I2C
SDA
SCL
PwrPressed_H
SysEnb_H
PwrKill_H
IS_USB_5V
Qi_L
CHG_EN_H
Gauge_I2C
VAmbLight
VDDa
R22 100K 1% 0402 1/16W 4864.1003
VBoardRev
C25 0.1µF 10% 16V X7R 0751.0072 0402
J-TAG DEBUG PORT
J2
JTAG/SWD CONNECTOR
VCC
SWDIO|TMS
SWCLK|TCK
SWO|TDO
nRESET
GND
MCU_VDD
JTMS-SWDIO
JTCK-SWCLK
JTMS-SWO
JTRST
E19
RESET_L
TAG-CONNECT-NL
Permanent Memory (SN & Cal.)
V+2.8SYS
R21 1.00 1% 1/16W 4864.1R00 0402
R20 1% 2.49K 1/16W 4864.2491 0402
EE_VDD
U6
Vdd
SCL
SDA
WP
Vss
AT24CS08
Adrs: 0x50-53
1k x 8 I2C EEPROM
3045.0118
EE_WR_ENB_L
C30 0.1µF 10% 16V X7R 0751.0072 0402
MCU RTC Oscillator, 32,768Hz
R31 1.00 1% 1/16W 4864.1R00 0402
V+2.8RTC
U10
Vcc
OE
OUT
N.C.
32768Hz 5ppm
3052.0006
TP12
(030+Via)
Freq: 32,768.0 Hz
Osc_32768
C41 10% 0.1µF X7R 16V 0751.0072 0402
IS_Qi
USB_+5V
J53
USB
VBUS
DM
DP
ID
SH
1208.0062
MicroB USB IP67
USBD_N
USBD_P
USB_ID
E77
13x20
R129 22.1 1%
R134 0402 4864.221G
USB_N
USB_P
D52
nc-A
nc-B
nc-C
nc-D
SP3012-04
1760.0027
E75
E76
USB_SH
R133 1.00M 1% 1/16W 4864.1004 0402
C124 2200pF 5% 50V X7R 0751.0060 0402
SPI_Bus
SPI_SCLK
SPI_MOSI
CLK
MOSI
MISO
LCD_SPI
LCD_CS
LCD_EXTCOM
LCD_DISP
LCD_LED_H
Button_Cntl_L
Button_Up_L
Button_Dn_L
XLM_INT1
IO_I2C
DBG_LED_L
UART
DebugTxd
DebugRxd
TXD
RXD
DbgComm
Full UART
BLE_TXD
BLE_RXD
BLE_RTS
BLE_CTS
RTS
CTS
BLE_UART
BLE_MODE2
SDIO_Bus
SDIO_DAT3
SDIO_DAT2
SDIO_DAT1
SDIO_DAT0
SDIO_CMD
SDIO_CLK
DAT3
DAT2
DAT1
DAT0
CMD
CLK
GND

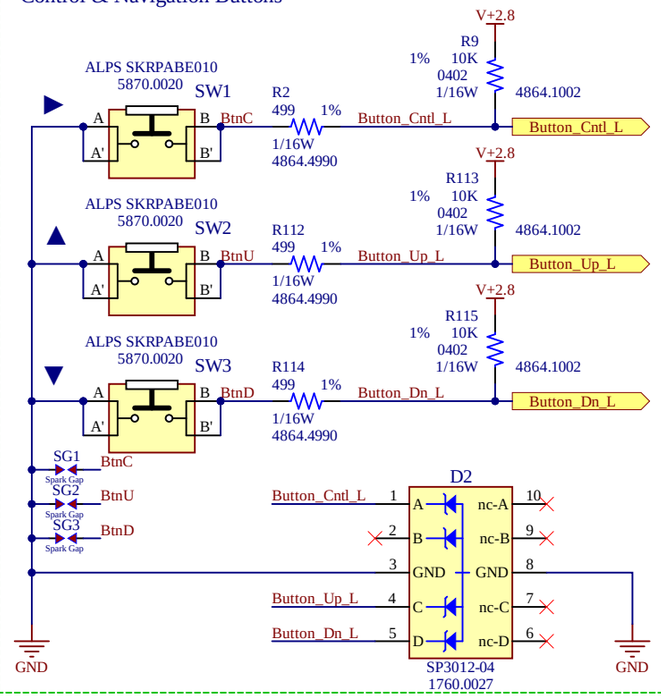
This is a Related Drawing, relating to the Scheduled Drawing "A730.12-SCH-IS-SD", which has been approved by a notifying body for the purpose of being used in an explosive environment. Do not revise this drawing without first having it reviewed by Engineering and the ISP Manager. Any changes to this drawing could result in an unsafe condition.

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

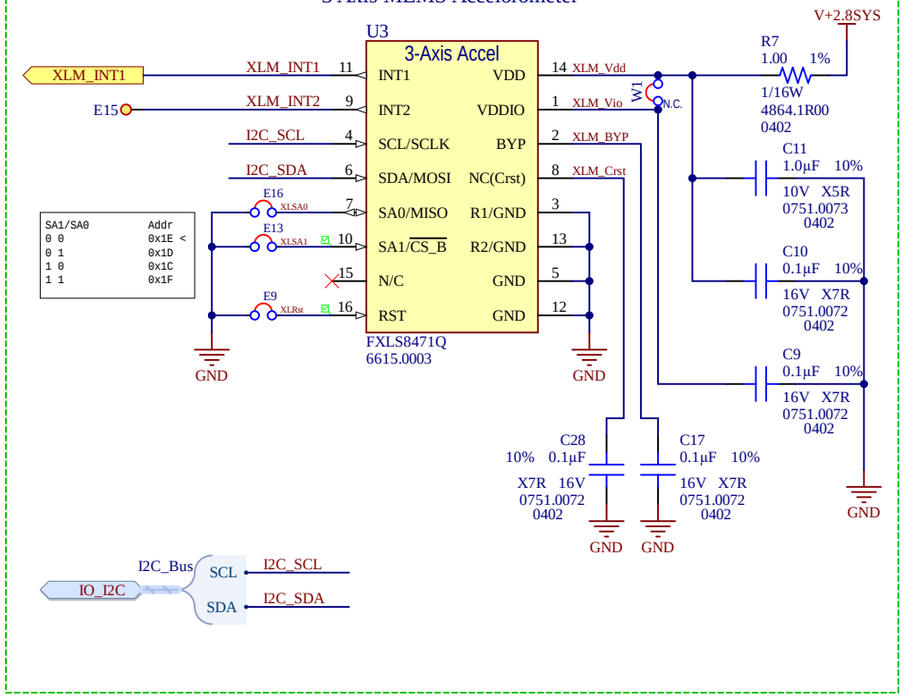
Title	Dosimeter Main Board		A730.01
Desc.	Processor, EEPROM & USB		
Size B	Item A730.01-IS		Rev. C
Created 10 Jan 2018			
Revised 20 Mar 2020	Eng. Alan Rasmussen		Sheet 6/9

A730_01 Processor.SchDoc

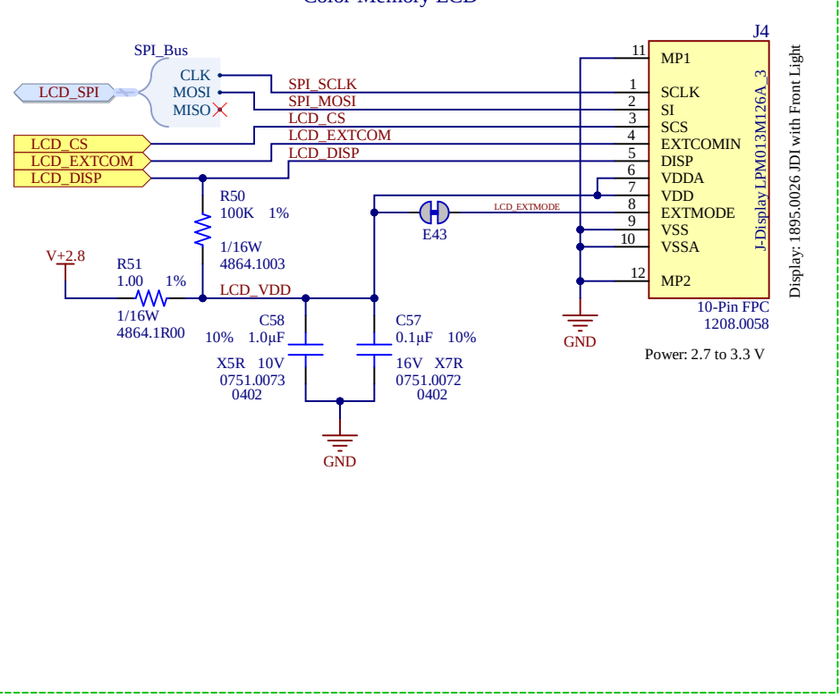
Control & Navigation Buttons



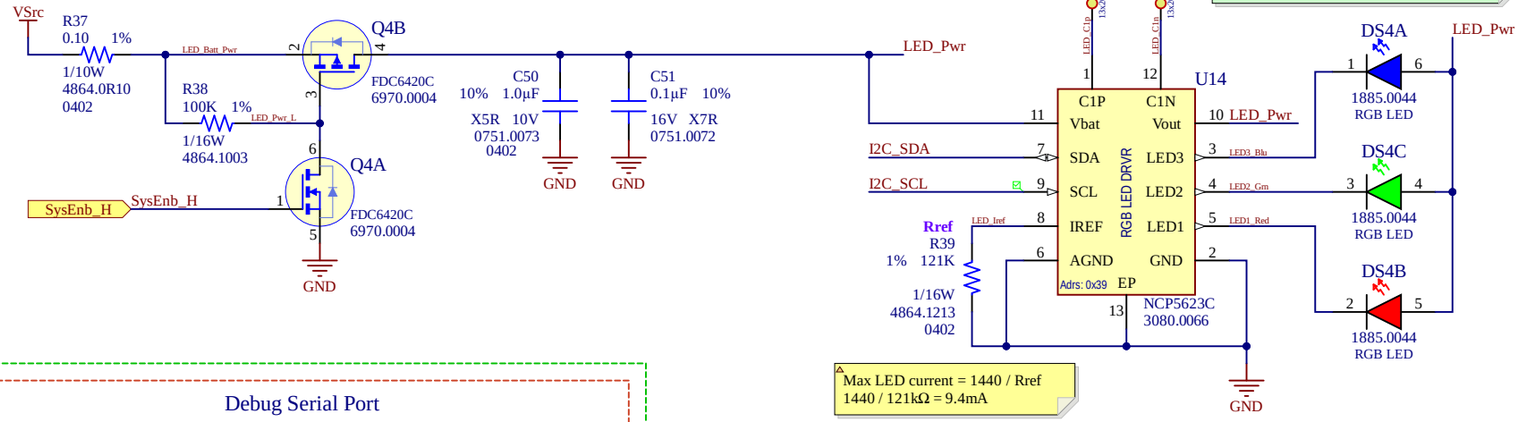
3 Axis MEMS Accelerometer



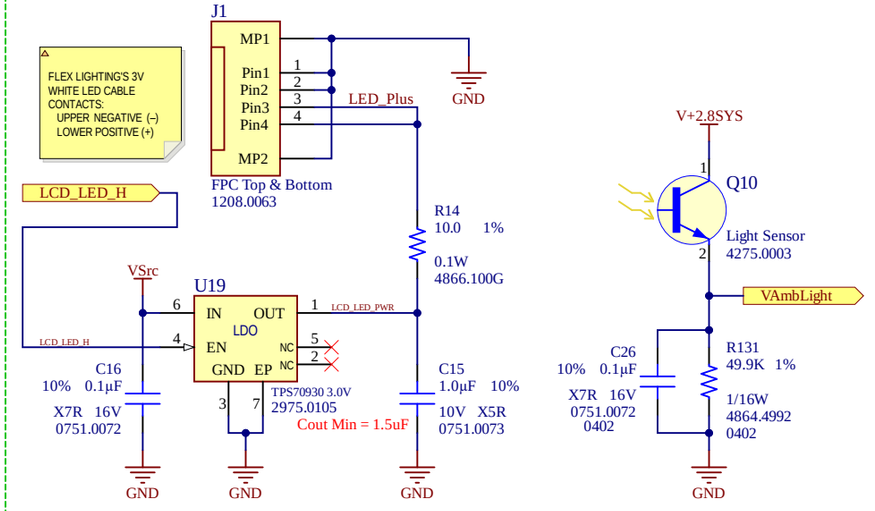
Color Memory LCD



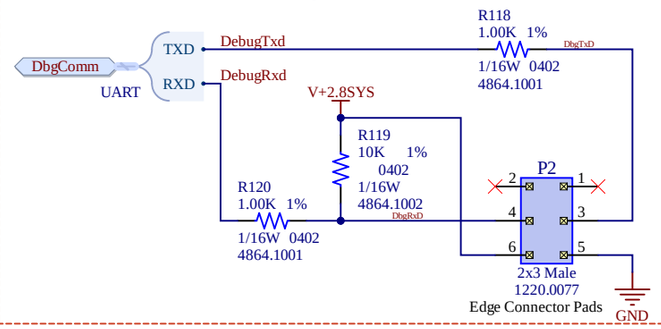
Tri-Color LED Status Indicator



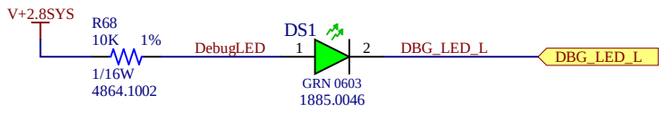
LCD Front Light Connector and Ambient Light Sensor



Debug Serial Port



Debug LED



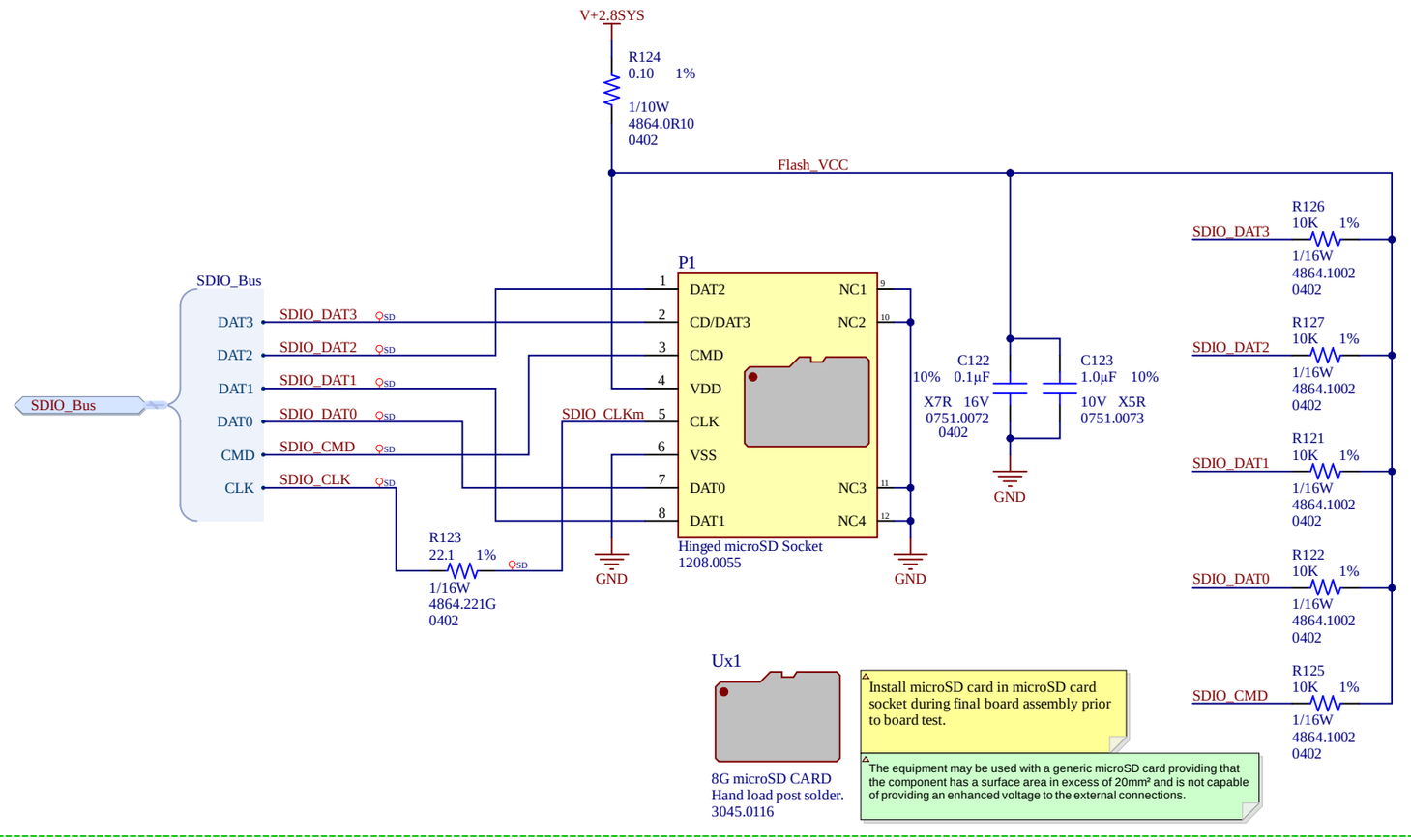
This is a Related Drawing, relating to the Scheduled Drawing "A730.12-SCH-IS-SD", which has been approved by a notifying body for the purpose of being used in an explosive environment. Do not revise this drawing without first having it reviewed by Engineering and the ISP Manager. Any changes to this drawing could result in an unsafe condition.

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Title	Dosimeter Main Board		A730.01
Desc.	IO Devices (Buttons, LED, Display & RTC)		
Size	B	Item	A730.01-IS
Rev.	C		
Created	10 Jan 2018	Eng.	Alan Rasmussen
Revised	20 Mar 2020	Sheet	7 / 9

A730_01 IO Devices.SchDoc

microSD — Storage for User Data and Setups

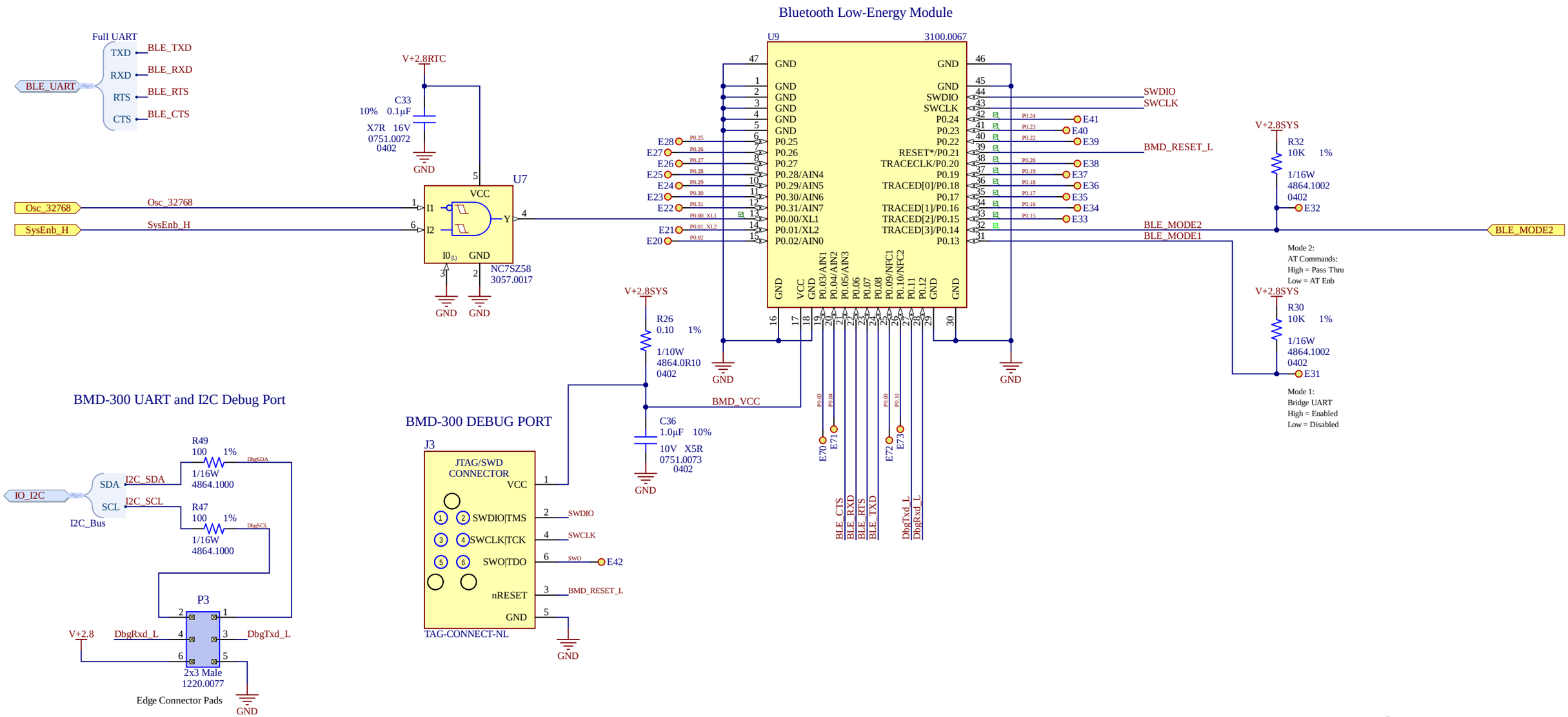


This is a Related Drawing, relating to the Scheduled Drawing "A730.12-SCH-IS-SD", which has been approved by a notifying body for the purpose of being used in an explosive environment. Do not revise this drawing without first having it reviewed by Engineering and the ISP Manager. Any changes to this drawing could result in an unsafe condition.

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Title	Dosimeter Main Board		A730.01
Desc.	Flash Memory		
Size	B	Item A730.01-IS	Rev. C
Created	10 Jan 2018	Eng. Alan Rasmussen	Sheet 8/9
Revised	20 Mar 2020		

A730_01 Memory.SchDoc



This is a Related Drawing, relating to the Scheduled Drawing "A730.12-SCH-IS-SD", which has been approved by a notifying body for the purpose of being used in an explosive environment. Do not revise this drawing without first having it reviewed by Engineering and the ISP Manager. Any changes to this drawing could result in an unsafe condition.

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Title	Dosimeter Main Board		A730.01
Desc.	Bluetooth Low Energy Communications		
Size	B	Item A730.01-IS	Rev. C
Created	10 Jan 2018	Eng. Alan Rasmussen	Sheet 9/9
Revised	20 Mar 2020		

A730_01 Bluetooth.SchDoc